What is claimed is:

1. An apparatus for performing a hierarchical coding, comprising:

means for forming an image data of a second hierarchy having a number of pixels which is smaller than that of an image data of a first hierarchy;

means for correcting the image data of the second hierarchy and generating a corrected data;

means for predicting the image data of the first hierarchy in accordance with the corrected data and generating a predicted data of the first hierarchy having a plurality of predicted pixels;

means for calculating predictive error of the predicted data of the first hierarchy with respect to the image data of the first hierarchy;

means for determining suitability of the corrected data in accordance with the predicted error; and

means for outputting the corrected data as the image data of the second hierarchy in accordance with the determined result.

2. An apparatus according to claim 1, wherein said predicting means includes:

means for generating class information for the corrected data; and

means for generating the predicted pixels in accordance with the class information.

3. An apparatus according to claim 1, wherein said predicting means includes:

means for generating predictive coefficients based upon the corrected data; and

means for generating the predicted data of the first hierarchy based upon the corrected data and the predictive coefficients.

4. An apparatus according to claim 1, wherein said predicting means includes:

means for generating class information using a plurality of pixels of the corrected data;

means for generating predictive coefficients for each class using the image data of the first hierarchy and the corrected data; and

means for generating the predicted pixels of the first hierarchy using the predictive coefficients corresponding to the class information and the corrected data.

5. An apparatus according to claim 4, wherein said outputting means outputs the image data of the second hierarchy with the predictive coefficients for each class.

6. An apparatus according to claim 1, wherein said predicting means includes:

memory storing predictive coefficients for each class;

means for generating class information using a plurality of pixels of the corrected data; and

means for reading the predictive coefficients corresponding to the class information from the memory and generating the predicted pixels of the first hierarchy using the read predictive coefficients and the corrected data.

7. An apparatus according to claim 6, wherein said predictive coefficients for each class stored in said memory are generated using an image data for learning.

8. An apparatus according to claim 7, wherein said outputting means outputs the image data of the second hierarchy with the predictive coefficients for each class.

9. An apparatus according to claim 1, wherein

said correcting means includes a memory storing correction values to correct the image data of the second hierarchy; and

said correcting means corrects the image data of the second hierarchy using the correction values.

10. An apparatus according to claim 1, wherein

said determining means determines suitability of the corrected data by detecting whether the predicted error is less than a prescribed threshold value; and

said outputting means outputs the corrected data as the coded data in response to the predicted error being less than the prescribed threshold value.

11. An apparatus for decoding data represented by a hierarchical coding of an image, comprising:

means for receiving the coded data including at least image data of a second hierarchy having a number of pixels which is smaller than that of an image data of a first hierarchy;

means for decoding the image data of the first hierarchy from image data of the second hierarchy by steps of:

forming the image data of the second hierarchy and generating a corrected data;

predicting the image data of the first hierarchy in accordance with the corrected data and generating a predicted data of the first hierarchy having a plurality of predicted pixels;

calculating predictive error of the predicted data of the first hierarchy with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error;

repeating the correcting operation as necessary until the corrected data becomes an optimum corrected data; and

outputttting the optimum corrected data as the image data of the second hierarchy.

12. An apparatus according to claim 11, wherein

said decoding means includes means for generating class information of the image data of the second hierarchy; and

means for predicting the image data of the first hierarchy in accordance with the class information.

13. An apparatus according to claim 11, wherein

said coded data includes predictive coefficients to predict the image data of the first hierarchy; and

said decoding means includes means for predicting the image data of the first hierarchy using the predictive coefficients and the image data of the second hierarchy.

14. An apparatus according to claim 11, wherein

said coded data includes predictive coefficients for each class to predict the image data of the first hierarchy; and

said decoding means includes:

means for generating class information using a plurality of pixels of the image data of the second hierarchy; and

means for predicting the image data of the first hierarchy using the predictive coefficients corresponding to the class information and the image data of the second hierarchy.

15. An apparatus according to claim 11, wherein said decoding means includes:

memory storing predictive coefficients for each class;

means for generating class information using a plurality of pixels of the image data of the second hierarchy; and

means for reading the predictive coefficients corresponding to the generated class information from the memory and generating the image data of the first hierarchy using the read predictive coefficients and the image data of the second hierarchy.

16. An apparatus according to claim 15, wherein said predictive coefficients for each class stored in memory are generated using an image data for learning.

17. An apparatus for performing a hierarchy coding comprising:

means for extracting a plurality of pixels of image data of a first hierarchy and generating class information corresponding to characteristics of the extracted plurality of pixels;

means for storing mapping coefficients for each class; and

means for reading mapping coefficients corresponding to the class information and predicting image data of a second hierarchy using the image data of the first hierarchy and the read mapping coefficients, the image data of the second hierarchy having a number of pixels which is smaller than that of the image data of the first hierarchy.

18. An apparatus according to claim 17, wherein said predicting means includes:

means for extracting a plurality of pixels from the image data of the first hierarchy; and

means for predicting the image data of the second hierarchy where a number of pixels of the image data of the first hierarchy is reduced, based upon the extracted plurality of pixels and the read mapping coefficients.

19. An apparatus according to claim 17, wherein

the mapping coefficients for each class are generated using an image data for learning.

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20. An apparatus according to claim 17, wherein the mapping coefficients for each class are generated so that the predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is minimum.

21. An apparatus according to claim 17, wherein

the mapping coefficients for each class are generated so that predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second

hierarchy and the image data of the first hierarchy for learning is less than a prescribed threshold value.

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22. An apparatus according to claim 17, wherein the mapping for each class is generated by the steps of:

extracting a plurality of pixels of image data of a first hierarchy for learning and generating class information corresponding to the characteristics of the extracted plurality of pixels;

predicting image data of the second hierarchy where a number of pixels for the image data of the first hierarchy for learning using the image data of the first hierarchy for learning and mapping coefficients corresponding to the class information;

predicting the image data of the first hierarchy for learning in accordance with the coded data and generating predicted data having a plurality of predicted pixels;

generating a predicted error of the predicted data of the image of the first hierarchy for learning with respect to the image data of the first hierarchy for learning;

updating the mapping coefficients in accordance with the predicted error until the mapping coefficients are optimum mapping coefficients; and

determining the optimum mapping coefficients.

23. An apparatus according to claim 17, wherein the mapping for each class is generated by the steps of:

forming an image data of the second hierarchy having a number of pixels that is smaller than that of an image data of the first hierarchy for learning;

correcting the image data of the second hierarchy and generating a corrected data;

predicting the image data of the first hierarchy for learning in accordance with the corrected data and generating a predicted data of the first hierarchy for learning having a plurality of predicted pixels;

calculating the predictive error of the predicted data of the first hierarchy for learning with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error;

repeating the correcting operation until the corrected data is an optimum corrected data; and

generating optimum mapping coefficients for each class using the image data of the first hierarchy for learning and the optimum corrected data.

24. An apparatus for decoding a coded data hierarchical coding an image data comprising:

means for receiving the coded data including at least image data of the second hierarchy, the image data of the second hierarchy having a number of pixels which is smaller than that of an image data of the first hierarchy; and

means for decoding the image data of the first hierarchy from image data of the second hierarchy,

said coded data generated by the steps of:

extracting a plurality of pixels of an image data of a first hierarchy and generating class information corresponding to characteristics of the extracted plurality of pixels; and

reading mapping coefficients corresponding to the class information from a memory in which mapping coefficients for each class are stored and predicting an image data of the second

hierarchy using the image data of the second hierarchy having a number of pixels which is smaller than that of the image data of the first hierarchy.

25. An apparatus according to claim 24, wherein said decoding means includes:

memory for storing predicted coefficients for each class used to generate the mapping coefficients for each class;

means for extracting a plurality of pixels of the image data of the second hierarchy and generating class information corresponding to the extracted plurality of pixels; and

means for reading predicted coefficients corresponding to the class information and predicting a decoded image data of a first hierarchy using the image data of the second hierarchy and the read predicted coefficients.

26. An apparatus according to claim 25, wherein

the predicted coefficients for each class are generated using an image data for learning.

27. An apparatus according to claim 24, wherein

the mapping coefficients for each class are generated using an image data for learning.

28. An apparatus according to claim 24, wherein

the mapping coefficients for each class are generated so that predicted error between predicted data of the image data of the first hierarchy for learning is predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is minimum.

29. An apparatus according to claim 24, wherein

the mapping coefficients for each class are generated so that predicted error between predicted data of the image data of the first hierarchy for learning is predicted using image data of the second hierarchy and the image data of the first hierarchy for learning is less than prescribed threshold values.

30. An apparatus for performing a hierarchical coding, comprising:

means for forming an image data of a second hierarchy having a number of pixels which is smaller than that of an image data of a first hierarchy;

means for forming an image data of a third hierarchy having a number of pixels which is smaller than that of an image data of the second hierarchy;

means for correcting the image data of the third hierarchy and generating a corrected data of the third hierarchy;

first predicting means for generating predicted data of the second hierarchy, having a plurality of pixels, in accordance with the corrected data of the third hierarchy;

second predicting means for generating a prediction value of the first hierarchy, having a plurality of pixels, in accordance with the prediction value of the second hierarchy;

error generating means for generating a predicted error of the prediction value of the first hierarchy with respect to the image data of the first hierarchy;

means for determining suitability of the corrected data of the third hierarchy in accordance with the predicted error; and

means for outputting the corrected data as the image data of the third hierarchy in accordance with the determined result.

31. The apparatus of claim 30, wherein said first predicting means includes:

means for generating class information for the corrected data of the third hierarchy; and

means for generating the prediction value of the second hierarchy in accordance with the class information.

32. The apparatus of claim 30, wherein said first predicting means includes:

means for generating predictive coefficients of the second hierarchy based upon the corrected data of the third hierarchy; and

means for generating the predicted data of the second hierarchy based upon the corrected data of the third hierarchy and the predictive coefficients of the second hierarchy.

33. The apparatus of claim 30, wherein said second predicting means includes:

means for generating class information for the predicted value of the second hierarchy; and

means for generating the prediction value of the first hierarchy in accordance with the class information.

34. The apparatus of claim 30, wherein said second predicting means includes:

means for generating predictive coefficients of the first hierarchy based upon the predicted value of the second hierarchy; and

means for generating the predicted value of the first hierarchy based upon the predicted value of the second hierarchy and the predictive coefficients of the first hierarchy.

35. An apparatus according to claim 30, wherein first predicting means includes:

means for generating class information using a plurality of pixels of the corrected data of the third hierarchy;

means for generating predictive coefficients for each class using the image data of the second hierarchy and the corrected data of the third hierarchy; and

means for generating the predicted value of the second hierarchy using the predictive coefficients corresponding to the class information and the corrected data.

36. An apparatus according to claim 35, wherein said outputting means outputs the correction data of the third hierarchy with the predictive coefficients for each class.

37. An apparatus according to claim 30, wherein said first predicting means includes:

memory storing predictive coefficients for each class;

means for generating class information using a plurality of pixels of the corrected data of the third hierarchy; and

means for reading the predictive coefficients corresponding to the class information from the memory and generating the predicted pixels of the second hierarchy using the read predictive coefficients and the corrected data of the third hierarchy.

38. An apparatus according to claim 37, wherein said predictive coefficients for each class stored in said memory are generated using an image data for learning.

39. An apparatus according to claim 38, wherein said outputting means outputs the corrected data of the third hierarchy with the predictive coefficients for each class.

40. An apparatus according to claim 30, wherein

said correcting means includes a memory storing correction values to correct the image data of the third hierarchy; and

said correcting means corrects the image data of the third hierarchy using the correction values.

41. An apparatus according to claim 30, wherein

said determining means determines suitability of the corrected data by detecting whether the predicted error is less than a prescribed threshold value; and

said outputting means outputs the corrected data of the third hierarchy as the coded data in response to the predicted error being less than the prescribed threshold value.

42. An apparatus according to claim 30, wherein second predicting means includes:

means for generating class information using the plurality of pixels of the predicted value of the second hierarchy;

means for generating predictive coefficients for each class using the image data of the first hierarchy and the predicted value of the second hierarchy; and

means for generating the predicted value of the first hierarchy using the predictive coefficients corresponding to the class information and the predicted value of the first hierarchy.

43. An apparatus according to claim 42, wherein said outputting means outputs the predicted value of the second hierarchy with the predictive coefficients for each class.

44. An apparatus according to claim 30, wherein said second predicting means includes:

memory storing predictive coefficients for each class;

means for generating class information using a plurality of pixels of the predicted value of the second hierarchy; and

means for reading the predictive coefficients corresponding to the class information from the memory and generating the predicted value of the first hierarchy using the read predictive coefficients and the predicted value of the second hierarchy.

45. An apparatus according to claim 44, wherein said predictive coefficients for each class stored in said memory are generated using an image data for learning.

46. An apparatus according to claim 45, wherein said outputting means outputs the predicted value of the second hierarchy along with the predictive coefficients for each class.

47. A method of performing a hierarchical coding, comprising:

forming an image data of a second hierarchy having a number of pixels which is smaller than that of an image data of a first hierarchy;

correcting the image data of the second hierarchy and generating a corrected data;

predicting the image data of the first hierarchy in accordance with the corrected data and generating a predicted data of the first hierarchy having a plurality of predicted pixels;

calculating predictive error of the predicted data of the first hierarchy with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error; and

outputting the corrected data as the image data of the second hierarchy in accordance with the determined result.

48. A method according to claim 47, wherein said predicting step includes:

generating class information for the corrected data; and

generating the predicted pixels in accordance with the class information.

49. A method according to claim 47, wherein said predicting step includes:

generating predictive coefficients based upon the corrected data; and

generating the predicted data of the first hierarchy based upon the corrected data and the predictive coefficients.

50. A method according to claim 47, wherein said predicting step includes:

generating class information using a plurality of pixels of the corrected data;

generating predictive coefficients for each class using the image data of the first hierarchy and the corrected data; and

generating the predicted pixels of the first hierarchy using the predictive coefficients corresponding to the class information and the corrected data.

51. A method according to claim 50, wherein said outputting step outputs the image data of the second hierarchy with the predictive coefficients for each class.

52. A method according to claim 47, wherein said predicting step includes:

generating class information using a plurality of pixels of the corrected data; and

reading from a memory predictive coefficients corresponding to the class information from the memory and generating the predicted pixels of the first hierarchy using the read predictive coefficients and the corrected data.

53. A method according to claim 52, wherein said predictive coefficients for each class stored in said memory are generated using an image data for learning.

54. A method according to claim 53, wherein said outputting step outputs the image data of the second hierarchy with the predictive coefficients for each class.

55. A method according to claim 47, wherein

said correcting step corrects the image data of the second hierarchy using correction values stored in a memory.

56. A method according to claim 47, wherein

said determining step determines suitability of the corrected data by detecting whether the predicted error is less than a prescribed threshold value; and

said outputting step outputs the corrected data as the coded data in response to the predicted error being less than the prescribed threshold value.

57. A method of decoding data represented by a hierarchical coding of an image, comprising:

receiving the coded data including at least image data of a second hierarchy having a number of pixels which is smaller than that of an image data of a first hierarchy;

decoding the image data of the first hierarchy from image data of the second hierarchy by steps of:

forming the image data of the second hierarchy and generating a corrected data;

predicting the image data of the first hierarchy in accordance with the corrected data and generating a predicted data of the first hierarchy having a plurality of predicted pixels;

calculating predictive error of the predicted data of the first hierarchy with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error;

repeating the correcting operation as necessary until the corrected data becomes an optimum corrected data; and

outputttting the optimum corrected data as the image data of the second hierarchy.

58. A method according to claim 57, wherein

said decoding step includes step for generating class information of the image data of the second hierarchy; and

predicting the image data of the first hierarchy in accordance with the class information.

59. A method according to claim 57, wherein

said coded data includes predictive coefficients to predict the image data of the first hierarchy; and

said decoding step includes step for predicting the image data of the first hierarchy using the predictive coefficients and the image data of the second hierarchy.

60. A method according to claim 57, wherein

said coded data includes predictive coefficients for each class to predict the image data of the first hierarchy; and

said decoding step includes:

generating class information using a plurality of pixels of the image data of the second hierarchy; and

predicting the image data of the first hierarchy using the predictive coefficients corresponding to the class information and the image data of the second hierarchy.

61. A method according to claim 57, wherein said decoding step includes:

generating class information using a plurality of pixels of the image data of the second hierarchy; and

reading from a memory predictive coefficients corresponding to the generated class information and generating the image data of

the first hierarchy using the read predictive coefficients and the image data of the second hierarchy.

62. A method according to claim 61, wherein said predictive coefficients for each class stored in memory are generated using an image data for learning.

63. A method of performing a hierarchy coding comprising:

extracting a plurality of pixels of image data of a first hierarchy and generating class information corresponding to characteristics of the extracted plurality of pixels;

storing mapping coefficients for each class; and

reading mapping coefficients corresponding to the class information and predicting image data of a second hierarchy using the image data of the first hierarchy and the read mapping coefficients, the image data of the second hierarchy having a number of pixels which is smaller than that of the image data of the first hierarchy.

64. A method according to claim 63, wherein said predicting step includes:

extracting a plurality of pixels from the image data of the first hierarchy; and

predicting the image data of the second hierarchy where a number of pixels of the image data of the first hierarchy is reduced, based upon the extracted plurality of pixels and the read mapping coefficients.

65. A method according to claim 63, wherein

the mapping coefficients for each class are generated using an image data for learning.

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66. A method according to claim 63, wherein the mapping coefficients for each class are generated so that the predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is minimum.

67. A method according to claim 63, wherein

the mapping coefficients for each class are generated so that predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is less than a prescribed threshold value.

Sub B4

68. A method according to claim 63, wherein the mapping for each class is generated by the steps of:

extracting a plurality of pixels of image data of a first hierarchy for learning and generating class information corresponding to the characteristics of the extracted plurality of pixels;

predicting image data of the second hierarchy where a number of pixels for the image data of the first hierarchy for learning using the image data of the first hierarchy for learning and mapping coefficients corresponding to the class information;

predicting the image data of the first hierarchy for learning in accordance with the coded data and generating predicted data having a plurality of predicted pixels;

generating a predicted error of the predicted data of the image of the first hierarchy for learning with respect to the image data of the first hierarchy for learning;

updating the mapping coefficients in accordance with the predicted error until the mapping coefficients are optimum mapping coefficients; and

determining the optimum mapping coefficients.

69. A method according to claim 63, wherein the mapping for each class is generated by the steps of:

forming an image data of the second hierarchy having a number of pixels that is smaller than that of an image data of the first hierarchy for learning;

correcting the image data of the second hierarchy and generating a corrected data;

predicting the image data of the first hierarchy for learning in accordance with the corrected data and generating a predicted data of the first hierarchy for learning having a plurality of predicted pixels;

calculating the predictive error of the predicted data of the first hierarchy for learning with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error;

repeating the correcting operation until the corrected data is an optimum corrected data; and

generating optimum mapping coefficients for each class using the image data of the first hierarchy for learning and the optimum corrected data.

70. A method of decoding a coded data hierarchical coding an image data comprising:

receiving the coded data including at least image data of the second hierarchy, the image data of the second hierarchy having a number of pixels which is smaller than that of an image data of the first hierarchy; and

decoding the image data of the first hierarchy from image data of the second hierarchy,

said coded data generated by the steps of:

extracting a plurality of pixels of an image data of a first hierarchy and generating class information corresponding to characteristics of the extracted plurality of pixels; and

reading mapping coefficients corresponding to the class information from a memory in which mapping coefficients for each class are stored and predicting an image data of the second hierarchy using the image data of the second hierarchy having a number of pixels which is smaller than that of the image data of the first hierarchy.

71. A method according to claim 70, wherein said decoding step includes:

extracting a plurality of pixels of the image data of the second hierarchy and generating class information corresponding to the extracted plurality of pixels; and

reading from a memory predicted coefficients corresponding to the class information and predicting a decoded image data of a first hierarchy using the image data of the second hierarchy and the read predicted coefficients.

72. A method according to claim 71, wherein

the predicted coefficients for each class are generated using an image data for learning.

73. A method according to claim 70, wherein

the mapping coefficients for each class are generated using an image data for learning.

74. A method according to claim 70, wherein

the mapping coefficients for each class are generated so that predicted error between predicted data of the image data of the first hierarchy for learning is predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is minimum.

75. A method according to claim 70, wherein

the mapping coefficients for each class are generated so that predicted error between predicted data of the image data of the first hierarchy for learning is predicted using image data of the second hierarchy and the image data of the first hierarchy for learning is less than prescribed threshold values.

76. A method of performing a hierarchical coding, comprising:

forming an image data of a second hierarchy having a number of pixels which is smaller than that of an image data of a first hierarchy;

forming an image data of a third hierarchy having a number of pixels which is smaller than that of an image data of the second hierarchy;

correcting the image data of the third hierarchy and generating a corrected data of the third hierarchy;

first predicting step for generating predicted data of the second hierarchy, having a plurality of pixels, in accordance with the corrected data of the third hierarchy;

second predicting step for generating a prediction value of the first hierarchy, having a plurality of pixels, in accordance with the prediction value of the second hierarchy;

error generating step for generating a predicted error of the prediction value of the first hierarchy with respect to the image data of the first hierarchy;

determining suitability of the corrected data of the third hierarchy in accordance with the predicted error; and

outputting the corrected data as the image data of the third hierarchy in accordance with the determined result.

77. A method according to claim 76, wherein said first predicting step includes:

generating class information for the corrected data of the third hierarchy; and

generating the prediction value of the second hierarchy in accordance with the class information.

78. A method according to claim 76, wherein said first predicting step includes:

generating predictive coefficients of the second hierarchy based upon the corrected data of the third hierarchy; and

generating the predicted data of the second hierarchy based upon the corrected data of the third hierarchy and the predictive coefficients of the second hierarchy.

79. A method according to claim 76, wherein said second predicting step includes:

generating class information for the predicted value of the second hierarchy; and

generating the prediction value of the first hierarchy in accordance with the class information.

80. A method according to claim 76, wherein said second predicting step includes:

generating predictive coefficients of the first hierarchy based upon the predicted value of the second hierarchy; and

generating the predicted value of the first hierarchy based upon the predicted value of the second hierarchy and the predictive coefficients of the first hierarchy.

81. A method according to claim 76, wherein first predicting step includes:

generating class information using a plurality of pixels of the corrected data of the third hierarchy;

generating predictive coefficients for each class using the image data of the second hierarchy and the corrected data of the third hierarchy; and

generating the predicted value of the second hierarchy using the predictive coefficients corresponding to the class information and the corrected data.

82. A method according to claim 81, wherein said outputting step outputs the correction data of the third hierarchy with the predictive coefficients for each class.

83. A method according to claim 76, wherein said first predicting step includes:

generating class information using a plurality of pixels of the corrected data of the third hierarchy; and

reading from a memory the predictive coefficients corresponding to the class information and generating the predicted pixels of the second hierarchy using the read predictive coefficients and the corrected data of the third hierarchy.

84. A method according to claim 83, wherein said predictive coefficients for each class stored in said memory are generated using an image data for learning.

85. A method according to claim 84, wherein said outputting step outputs the corrected data of the third hierarchy with the predictive coefficients for each class.

86. A method according to claim 76, wherein

said correcting step corrects the image data of the third hierarchy using correction values read from a memory.

87. A method according to claim 76, wherein

said determining step determines suitability of the corrected data by detecting whether the predicted error is less than a prescribed threshold value; and

said outputting step outputs the corrected data of the third hierarchy as the coded data in response to the predicted error being less than the prescribed threshold value.

88. A method according to claim 76, wherein second predicting step includes:

generating class information using the plurality of pixels of the predicted value of the second hierarchy;

generating predictive coefficients for each class using the image data of the first hierarchy and the predicted value of the second hierarchy; and

generating the predicted value of the first hierarchy using the predictive coefficients corresponding to the class information and the predicted value of the first hierarchy.

89. A method according to claim 88, wherein said outputting step outputs the predicted value of the second hierarchy with the predictive coefficients for each class.

90. A method according to claim 76, wherein said second predicting step includes:

generating class information using a plurality of pixels of the predicted value of the second hierarchy; and

reading from a memory the predictive coefficients corresponding to the class information and generating the predicted value of the first hierarchy using the read predictive coefficients and the predicted value of the second hierarchy.

91. A method according to claim 90, wherein said predictive coefficients for each class stored in said memory are generated using an image data for learning.

92. A method according to claim 91, wherein said outputting step outputs the predicted value of the second hierarchy along with the predictive coefficients for each class.

93. A method of performing a hierarchical coding, comprising:

forming an image data of a second hierarchy having a number of pixels which is smaller than that of an image data of a first hierarchy;

correcting the image data of the second hierarchy and generating a corrected data;

predicting the image data of the first hierarchy in accordance with the corrected data and generating a predicted data of the first hierarchy having a plurality of predicted pixels;

calculating predictive error of the predicted data of the first hierarchy with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error; and

transmitting the corrected data as the image data of the second hierarchy in accordance with the determined result.

94. A method according to claim 93, wherein said predicting step includes:

generating class information for the corrected data; and

generating the predicted pixels in accordance with the class information.

95. A method according to claim 93, wherein said predicting step includes:

generating predictive coefficients based upon the corrected data; and

generating the predicted data of the first hierarchy based upon the corrected data and the predictive coefficients.

96. A method according to claim 93, wherein said predicting step includes:

generating class information using a plurality of pixels of the corrected data;

generating predictive coefficients for each class using the image data of the first hierarchy and the corrected data; and

generating the predicted pixels of the first hierarchy using the predictive coefficients corresponding to the class information and the corrected data.

97. A method according to claim 96, wherein said transmitting step transmits the image data of the second hierarchy with the predictive coefficients for each class.

98. A method according to claim 93, wherein said predicting step includes:

generating class information using a plurality of pixels of the corrected data; and

reading from a memory predictive coefficients corresponding to the class information from the memory and generating the predicted pixels of the first hierarchy using the read predictive coefficients and the corrected data.

99. A method according to claim 98, wherein said predictive coefficients for each class stored in said memory are generated using an image data for learning.

100. A method according to claim 99, wherein said transmitting step transmits the image data of the second hierarchy with the predictive coefficients for each class.

101. A method according to claim 93, wherein

said correcting step corrects the image data of the second hierarchy using correction values stored in a memory.

102. A method according to claim 93, wherein

said determining step determines suitability of the corrected data by detecting whether the predicted error is less than a prescribed threshold value; and

said transmitting step transmits the corrected data as the coded data in response to the predicted error being less than the prescribed threshold value.

103. An article of manufacture having recorded thereon coded image data, the article of manufacture produced by the following steps of:

forming an image data of a second hierarchy having a number of pixels which is smaller than that of an image data of a first hierarchy;

correcting the image data of the second hierarchy and generating a corrected data;

predicting the image data of the first hierarchy in accordance with the corrected data and generating a predicted data of the first hierarchy having a plurality of predicted pixels;

calculating predictive error of the predicted data of the first hierarchy with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error; and

recording the corrected data as the image data of the second hierarchy in accordance with the determined result.

104. An article of manufacture according to claim 103, wherein said predicting step includes:

generating class information for the corrected data; and

generating the predicted pixels in accordance with the class information.

105. An article of manufacture according to claim 103, wherein said predicting step includes:

generating predictive coefficients based upon the corrected data; and

generating the predicted data of the first hierarchy based upon the corrected data and the predictive coefficients.

106. An article of manufacture according to claim 103, wherein said predicting step includes:

generating class information using a plurality of pixels of the corrected data;

generating predictive coefficients for each class using the image data of the first hierarchy and the corrected data; and

generating the predicted pixels of the first hierarchy using the predictive coefficients corresponding to the class information and the corrected data.

107. An article of manufacture according to claim 106, wherein said recording step records the image data of the second hierarchy with the predictive coefficients for each class.

108. An article of manufacture according to claim 103, wherein said predicting step includes:

generating class information using a plurality of pixels of the corrected data; and

reading from a memory predictive coefficients corresponding to the class information from the memory and generating the predicted pixels of the first hierarchy using the read predictive coefficients and the corrected data.

109. An article of manufacture according to claim 108, wherein said predictive coefficients for each class stored in said memory are generated using an image data for learning.

110. An article of manufacture according to claim 109, wherein said recording step records the image data of the second hierarchy with the predictive coefficients for each class.

111. An article of manufacture according to claim 103, wherein said correcting step corrects the image data of the second hierarchy using correction values stored in a memory.

112. An article of manufacture according to claim 103, wherein said determining step determines suitability of the corrected data by detecting whether the predicted error is less than a prescribed threshold value; and

said recording step records the corrected data as the coded data in response to the predicted error being less than the prescribed threshold value.

113. A method of transmitting code image data, the coded image data produced by the following steps of:

forming an image data of a second hierarchy having a number of pixels which is smaller than that of an image data of a first hierarchy;

correcting the image data of the second hierarchy and generating a corrected data;

predicting the image data of the first hierarchy in accordance with the corrected data and generating a predicted data of the first hierarchy having a plurality of predicted pixels;

calculating predictive error of the predicted data of the first hierarchy with respect to the image data of the first hierarchy; and

determining suitability of the corrected data in accordance with the predicted error.

114. A method of transmitting according to claim 113, wherein said predicting step includes:

generating class information for the corrected data; and

generating the predicted pixels in accordance with the class information.

115. A method of transmitting according to claim 113, wherein said predicting step includes:

generating predictive coefficients based upon the corrected data; and

generating the predicted data of the first hierarchy based upon the corrected data and the predictive coefficients.

116. A method of transmitting according to claim 113, wherein said predicting step includes:

generating class information using a plurality of pixels of the corrected data;

generating predictive coefficients for each class using the image data of the first hierarchy and the corrected data; and

generating the predicted pixels of the first hierarchy using the predictive coefficients corresponding to the class information and the corrected data.

117. A method of transmitting according to claim 116, wherein said recording step records the image data of the second hierarchy with the predictive coefficients for each class.

118. A method of transmitting according to claim 113, wherein said predicting step includes:

generating class information using a plurality of pixels of the corrected data; and

reading from a memory predictive coefficients corresponding to the class information from the memory and generating the predicted pixels of the first hierarchy using the read predictive coefficients and the corrected data.

119. A method of transmitting according to claim 118, wherein said predictive coefficients for each class stored in said memory are generated using an image data for learning.

120. A method of transmitting according to claim 119, wherein said recording step records the image data of the second hierarchy with the predictive coefficients for each class.

121. A method of transmitting according to claim 113, wherein said correcting step corrects the image data of the second hierarchy using correction values stored in a memory.

122. A method of transmitting according to claim 113, wherein said determining step determines suitability of the corrected data by detecting whether the predicted error is less than a prescribed threshold value; and

said recording step records the corrected data as the coded data in response to the predicted error being less than the prescribed threshold value.

123. A method of transmitting hierarchically coded data, the method comprising:

receiving the hierarchically coded image data; and

transmitting the hierarchically coded image data,

wherein the hierarchically coded image data has been formed by steps of:

extracting a plurality of pixels of image data of a first hierarchy and generating class information corresponding to characteristics of the extracted plurality of pixels;

storing mapping coefficients for each class; and

reading mapping coefficients corresponding to the class information and predicting image data of a second hierarchy using the image data of the first hierarchy and the read mapping coefficients, the image data of the second hierarchy

having a number of pixels which is smaller than that of the image data of the first hierarchy.

124. The method according to claim 123, wherein said predicting step includes:

extracting a plurality of pixels from the image data of the first hierarchy; and

predicting the image data of the second hierarchy where a number of pixels of the image data of the first hierarchy is reduced, based upon the extracted plurality of pixels and the read mapping coefficients.

125. The method according to claim 123, wherein

the mapping coefficients for each class are generated using an image data for learning.

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126. The method according to claim 123, wherein the mapping coefficients for each class are generated so that the predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is minimum.

127. The method according to claim 123, wherein

the mapping coefficients for each class are generated so that predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is less than a prescribed threshold value.

128. The method according to claim 123, wherein the mapping for each class is generated by the steps of:

extracting a plurality of pixels of image data of a first hierarchy for learning and generating class information corresponding to the characteristics of the extracted plurality of pixels;

predicting image data of the second hierarchy where a number of pixels for the image data of the first hierarchy for learning using the image data of the first hierarchy for learning and mapping coefficients corresponding to the class information;

predicting the image data of the first hierarchy for learning in accordance with the coded data and generating predicted data having a plurality of predicted pixels;

generating a predicted error of the predicted data of the image of the first hierarchy for learning with respect to the image data of the first hierarchy for learning;

updating the mapping coefficients in accordance with the predicted error until the mapping coefficients are optimum mapping coefficients; and

determining the optimum mapping coefficients.

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129. The method according to claim 123, wherein the mapping for each class is generated by the steps of:

forming an image data of the second hierarchy having a number of pixels that is smaller than that of an image data of the first hierarchy for learning;

correcting the image data of the second hierarchy and generating a corrected data;

predicting the image data of the first hierarchy for learning in accordance with the corrected data and generating a predicted data

of the first hierarchy for learning having a plurality of predicted pixels;

calculating the predictive error of the predicted data of the first hierarchy for learning with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error;

repeating the correcting operation until the corrected data is an optimum corrected data; and

generating optimum mapping coefficients for each class using the image data of the first hierarchy for learning and the optimum corrected data.

130. An article of manufacture having recorded thereon hierarchically coded image data, the hierarchically coded image data formed by the steps of:

extracting a plurality of pixels of image data of a first hierarchy and generating class information corresponding to characteristics of the extracted plurality of pixels;

storing mapping coefficients for each class; and

reading mapping coefficients corresponding to the class information and predicting image data of a second hierarchy using the image data of the first hierarchy and the read mapping coefficients, the image data of the second hierarchy having a number of pixels which is smaller than that of the image data of the first hierarchy.

131. The article of manufacture according to claim 130, wherein said predicting step includes:

extracting a plurality of pixels from the image data of the first hierarchy; and

predicting the image data of the second hierarchy where a number of pixels of the image data of the first hierarchy is reduced, based upon the extracted plurality of pixels and the read mapping coefficients.

132. The article of manufacture according to claim 130, wherein the mapping coefficients for each class are generated using an image data for learning.

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133. The article of manufacture according to claim 130, wherein the mapping coefficients for each class are generated so that the predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is minimum.

134. The article of manufacture according to claim 130, wherein the mapping coefficients for each class are generated so that predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is less than a prescribed threshold value.

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135. The article of manufacture according to claim 130, wherein the mapping for each class is generated by the steps of:

extracting a plurality of pixels of image data of a first hierarchy for learning and generating class information corresponding to the characteristics of the extracted plurality of pixels;

predicting image data of the second hierarchy where a number of pixels for the image data of the first hierarchy for learning using the image data of the first hierarchy for learning and mapping coefficients corresponding to the class information;

predicting the image data of the first hierarchy for learning in accordance with the coded data and generating predicted data having a plurality of predicted pixels;

generating a predicted error of the predicted data of the image of the first hierarchy for learning with respect to the image data of the first hierarchy for learning;

updating the mapping coefficients in accordance with the predicted error until the mapping coefficients are optimum mapping coefficients; and

determining the optimum mapping coefficients.

136. The article of manufacture according to claim 130, wherein the mapping for each class is generated by the steps of:

forming an image data of the second hierarchy having a number of pixels that is smaller than that of an image data of the first hierarchy for learning;

correcting the image data of the second hierarchy and generating a corrected data;

predicting the image data of the first hierarchy for learning in accordance with the corrected data and generating a predicted data of the first hierarchy for learning having a plurality of predicted pixels;

calculating the predictive error of the predicted data of the first hierarchy for learning with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error;

repeating the correcting operation until the corrected data is an optimum corrected data; and

generating optimum mapping coefficients for each class using the image data of the first hierarchy for learning and the optimum corrected data.

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